Preschool Students' Perceptions of Mobile Learning through the Amazing Predator

Haziana Abdul Halim[1]*, Nur Adlin Adrina Abd Razak[2]

[1*] Faculty of Information and Interactive Technology, Widad University College, Kuantan, Pahang, Malaysia

[2] Faculty of Information and Interactive Technology, Widad University College, Kuantan, Pahang, Malaysia

Corresponding Author: haziana@widad.edu.my

Abstract

The integration of digital technology has transformed early childhood education, particularly through the use of mobile learning applications. This study examines preschool students' perceptions of mobile application use in learning, focusing on *The Amazing Predator* application. The study involved 40 preschool students aged 3–6 years and their guardians aged 21–50 years. Data were collected through an online questionnaire administered via Google Forms and analyzed using the Statistical Package for the Social Sciences (SPSS). The findings indicate that *The Amazing Predator* positively influenced preschool students' perceptions and learning experiences. The study highlights the potential of mobile applications as an engaging and supportive tool for enhancing learning experiences in preschool education.

Keywords: Mobile application, Preschool Students', Multimedia elements, Perception

1.0 Introduction

Children's formal education begins at the preschool level, which is an early education institution that provides learning opportunities for children aged 4 to 6 years before entering compulsory primary school education. Comprehensive education, starting from early childhood to higher education, is the backbone of national development (Mohad Nizam et. al., 2024, Siti Soraya Lin Abdullah Kamal et al., 2022). In the 21st century, the use of mobile applications is very suitable to be used in the teaching process in parallel with technological skills *(*Yahya & Syahrul Nizam 2022, Halizah & Zaidatun 2019).

The development of the educational system and curriculum is significantly influenced by technology tools including digital-based media such as educational games, instructional videos, electronic textbooks, augmented reality, virtual reality, and mobile applications (Noor Hidayah et al., 2023). Digitalization in education is part of the transformation of the education system in Malaysia which aims to produce educators and students who are creative, innovative, efficient and competitive, in line with current needs and aspirations of the Industrial Revolution 4.0 (Mohd Nizam et. al., 2024, Aminamul Saidah et. al., 2023). The transformation of teaching and learning patterns can be seen through the use of digital media, where the application of the concept of digitization and the use of technology as teaching aids by preschool teachers has the potential to increase teaching effectiveness (Mohd Nizam et. al., 2024, Fatin Imanina & Anuar, 2024).

According to Awang Hat Mohd Noor. (2024), Hamzah et al., (2022), Lan and Sie (2010), learning through mobile applications is a form of learning model that allows students to access learning materials from anywhere and at any time using mobile devices and the internet. Mobile applications are produced with a combination of multimedia elements such as text, graphics, audio, animation and video, produced interactively can have an impact on students following learning sessions effectively (Mohad Nizam et. al., 2024, Halizah & Zaidatun 2019). A study conducted by Halizah & Zaidatun (2019), Zaidatun (2011), stated that learning materials using interactive multimedia can attract students' interest and reduce boredom throughout the learning process. In this regard, according to a study by Mohd Nizam et. al., (2024), digital media should be used as teaching aids by preschool teachers to attract the interest and attention of children in today's digital era.

2.0 Mobile Application in Preschool Education

The changing world around us is the main explanation for the current shift in curriculum change. Technology now plays a much larger role in everyday education than it did a few decades ago (Karolina Kraj, 2019). The effects of the existence of Mobile applications can not only be

seen in the field of business, but they also have an impact in the field of education (Nordin & Bacotang, 2021). According to Awang Hat Mohd Noor (2024), Tasaratha Rajan & Maizatul Hayati (2022), the implementation of information and communication technology (ICT) in teaching and learning is a requirement outlined in the Malaysian Education Blueprint 2013–2025 (Ministry of Education Malaysia, 2013). Along with this development, the use of Android-based applications is increasingly gaining attention as an interactive alternative in line with 21st century pedagogy in the optimal use of technology (Hashim et al., 2023).

The latest trend around the world that is rapidly growing and changing is digital technology based on the concept of mobile applications (Suhaizal et. al., 2023). Children are highly likely to use application for extended periods of time depending on their needs, interests, timing, content, and structure of the application (Yelland & Gilbert, 2011). A recent study by Zaidatun (2019) has emphasized that teachers do not need to worry about how to review students at home with this application. Students can review lessons independently at home with the help of an Mobile application that acts as a teacher at home since this application contains audio and visual displays. It is important that the elements of learning through Mobile applications are arranged correctly and the interactions between different elements are integrated in an efficient and optimal way so that learning using Mobile applications is successful and its implementation is efficient.

According to Low & O'Connell (2006), learning using Mobile applications allows students to become more versatile and gives them a sense of independence. A previous study by Yi et al. (2009), stated that learning using common Mobile applications is thought to improve student performance by making learning more accessible. Mobile applications can create an engaging and effective learning environment for early childhood learning and teaching (Goodwin, 2012; Papadakis et al., 2016). Previous research by Becton Loveless (2021), found that using educational application will help students become more interested in subjects they would otherwise ignore. According to Hashim et al., (2023), Uralova (2021), the use of Mobile application has the potential to provide significant benefits, especially in the development of basic skills, strengthening cognitive skills, and increasing basic learning abilities among preschool children.

According to Hashim et al., (2023), The advancement of mobile application technology and the combination of multimedia elements are very helpful in terms of providing teaching materials. In developing Mobile applications for preschool children's learning, multimedia elements need to be optimally utilized to attract students' attention and convey information more effectively. The use of multi-sensory materials in this application also helps improve preschool

students' understanding (Hashim et al., 2023, Delgado et al., 2019). The learning environment can be transformed into a more eccentric and positive atmosphere through the use of digital media in teaching and learning. In addition, the effectiveness and efficiency of the teaching and learning process can also be improved (Nur Aisyah Kamaluddin & Hazrati Husnin, 2022, Nur Hafizah and Fariza 2021,). Children's development, whether at home or at school, is also found to be influenced by the use of digital media (Mohd Nizam et. al., 2024, Shamilatul Sufia & A'dawiyah, 2022).

2.1 Multimedia in Learning

In the 1990s, Multimedia Personal Computers (MPCs) became popular and made multimedia a 'powerful' tool in the learning process in educational institutions—from kindergarten to school, to college and university. *(*Yahya & Syahrul Nizam 2022). According to Yahya & Syahrul Nizam 2022 in their study, the level of student understanding has been proven to increase when using multimedia platforms in learning. In addition, the study statement also states that Multimedia also provides teachers with methods to make the teaching process more innovative and effective. Multimedia-based teaching and learning materials use words, pictures and various other elements (Awang Hat Mohd Noor. 2024, Mohd Nizam et. al., 2024, Yahya & Syahrul Nizam 2022, Mayer 2014).

The use of multimedia technology in learning facilitates teaching activities. According to Mohd Nizam et. al., (2024), Yahya & Syahrul Nizam (2022), the use of visual elements such as graphics, animations and interactives give educators the opportunity to express information in various ways that are clearer and easier to understand. Previous studies from (Hashim et al., 2023, Buang & Mohamad, 2019) the effect of using multimedia-based digital technology produces a new experience in learning that uses multiple senses such as listening, seeing where students better understand a topic through visual images. This statement is further proven by Hashim et al., (2023), Joosten et al., (2020) through their study that the creative combination and innovation in the use of a combination of media and visuals changes students' nature to be more aggressive and increases curiosity, interest and focus during the learning process. Several studies were reviewed by Noor Hidayah et al. (2023), and it was established that multimedia can influence children's cognitive processes, including selecting, organizing, and integrating information into their learning.

The existence of multimedia software is able to support the learning of preschool children who are weak and face difficulties in writing and reading skills. This is because today's children can be classified as digital natives, as they are exposed to a technological environment from birth

and tend to choose technology-based approaches over conventional methods (Hashim et al., (2023), Van Reijmersdal & Rozendaal, (2020). It was stated by Noor Hidayah et al. (2023) that the use of multimedia in learning helps preschool children comprehend complex topics while fostering positive engagement and enjoyment.

According to in an effort to develop Mobile applications to support preschool children's learning, multimedia elements need to be optimally utilized throughout the application planning and development process. The integration of these multimedia elements is important to attract students' interest and focus as well as provide a more interactive and effective approach to delivering information. The advantages of Mobile applications are also stated in a study by Nur Hafizah & Fariza (2021) that Mobile applications offer advantages through interactive multimedia elements such as animations, graphics, audio and video, which makes them more interesting.

2.2 The Perception of Mobile Application

The use of applications on android mobile devices has been identified as growing rapidly and is becoming a focus in the field of education and student development. Features such as flexibility, ease of access, and various technological capabilities have made these applications increasingly necessary in the current educational context (Nur Hafizah & Fariza 2021). Previous studies have highlighted the positive contribution of multimedia integration to teaching and learning, particularly among children and preschool students. For example, Hashim et al. (2023) developed a mobile application to support preschool children's learning, demonstrating the potential of mobile applications to enhance the delivery of learning content and promote student engagement. Similarly, Siti Nur Amierah and Mohd Norasri (2022) reported that instructional materials developed using multimedia applications can enhance the effectiveness of contemporary learning. In addition, interactive learning applications have been shown to encourage children's engagement and provide a more enjoyable learning experience (Safinah Ismail et al., 2023). Collectively, these studies demonstrate the potential of mobile and multimedia-based applications as effective and engaging learning tools for preschool education.

Earlier studies have highlighted the benefits of mobile applications in enhancing students' learning experiences. Nur Hafizah and Fariza (2021) reported that mobile applications can facilitate learning and increase students' interest through engaging content. Similarly, Awang Hat Mohd Noor (2024) found that mobile-based learning can reduce boredom and promote greater engagement. The integration of multimedia elements, including visual, audio,

animation, and colour, can further stimulate students' senses, attract their attention, and facilitate understanding (Nur Hafizah & Fariza, 2021; Nie et al., 2013). This approach has also been shown to support memorisation activities and create a more enjoyable learning environment (Safinah Ismail et al., 2023). Furthermore, Noor Hidayah et al. (2023) reported high levels of interest among preschool children participating in alphabet learning through a mobile application. Overall, these findings support the potential of interactive and multimedia-based mobile applications as engaging tools for enhancing learning among preschool children.

Previous studies have highlighted the potential of mobile applications to support effective and engaging learning. Nur Hafizah and Fariza (2021) found that Android-based mobile learning applications for Mathematics can facilitate teaching and learning in a more flexible and effective manner. Similarly, Safinah Ismail et al. (2023) reported that the Fun-Q application supports preschool children in learning and memorising the Qur'an through an accessible and engaging approach. Furthermore, the integration of multimedia elements, particularly graphics and animation, can enhance the presentation of learning content, increase learners' engagement, and facilitate understanding (Awang Hat Mohd Noor, 2024; Tasaratha Rajan & Maizatul Hayati, 2022). Collectively, these findings demonstrate the potential of mobile applications and multimedia-based approaches in enhancing the effectiveness and engagement of learning, particularly among young learners.

Previous studies have demonstrated the positive impact of mobile applications on students' learning experiences. Safinah Ismail et al. (2023) reported that digital Qur'an applications can enhance students' memorisation skills through interactive learning. Similarly, Mohd Hatta et al. (2022) found that the *Adik-Adik Solat* mobile application enhanced students' learning experiences, engagement, and motivation in learning prayer practices. In addition, Awang Hat Mohd Noor (2024) highlighted that technology-based learning can stimulate positive emotions and strengthen students' motivation. These findings suggest that mobile applications can serve as effective and engaging learning tools, particularly in supporting young learners' motivation, engagement, and learning development.

Previous studies have demonstrated the positive contribution of mobile technology to students' learning experiences. Nur Hafizah and Fariza (2021), Papadakis et al. (2016), and Nie et al. (2013) reported that the integration of mobile devices into planned educational activities can enhance students' motivation and academic performance. Similarly, Tasaratha Rajan and Maizatul Hayati (2022) found that mobile learning applications can improve students' performance, understanding, memory, and motivation, while multimedia-based learning materials can further enhance students' interest and engagement.

In the context of preschool education, Awang Hat Mohd Noor (2024) reported that mobile applications can strengthen student–teacher interaction and promote enjoyment in learning, thereby contributing to improved learning outcomes. Noor Hidayah et al. (2023) further demonstrated that children using an animated electronic storybook mobile application achieved higher learning scores and showed greater interest than those who did not use the application. Their study also found that the *Hooray! Hooray! ABC* mobile application improved alphabet recognition and understanding among preschool children aged 4–6 years. Collectively, these findings suggest that mobile applications have considerable potential as effective and engaging learning tools for enhancing preschool children's understanding, motivation, and learning outcomes.

Conclusion

According to Mohd Faizal Ramlan et al., (2023), the ability to provide interactive learning activities and to enable active student involvement in the learning process is recognized as the advantage of using mobile applications in education. In a study conducted by Awang Hat Mohd Noor (2024), Noor Hidayah et al. (2023), Mohd Faizal Ramlan et al. (2023), it was concluded that significant advantages in providing high accessibility to diverse learning materials are offered by mobile applications. In contrast to traditional learning approaches that rely on textbooks and limited physical resources, resources such as digital textbooks, learning videos, interactive modules, and online reference materials can be accessed by students quickly and at any time through mobile applications.

3.0 Method

This study was conducted specifically to examine the preschool students' perception using mobile application learning: The Amazing Predator. The main goal was to explore how students accept the use of Mobile applications in learning. Creative, innovative, dynamic and entertaining teaching approaches today are the main medium that is able to attract students' attention in the teaching and learning process (Nur Fatin Shamimi et al., 2021).

3.1 Study Design

This study employed a quantitative descriptive research design to examine students' knowledge and perceptions of mobile applications in learning. A survey method was adopted to facilitate standardized data collection and systematic analysis of respondents' views (Haziana

et al., 2025; Valova et al., 2024). Data were collected electronically using a structured questionnaire distributed through Google Forms.

3.2 Participants

A total of 40 caregivers and 40 preschool students were recruited as participants in this study through random selection. The caregivers were between 21 and 50 years of age, while the preschool students ranged from 3 to 6 years old. Although the sample size may be regarded as relatively modest, it is deemed sufficient for an exploratory investigation, as it provides meaningful insights into the general awareness and attitudes of students towards the tool (Zebua & Katemba, 2024).

3.3 Data Collection

Data was collected through a questionnaire and distributed to respondents via Google Forms. The questionnaire was designed to collect key demographic details, assess respondents' knowledge of Mobile applications in learning, and assess their perceptions of the application. The questionnaire comprised four sections. Section A collected demographic information, including the age and gender of the preschool children and their caregivers. Section B assessed respondents' knowledge and familiarity with mobile applications for learning, including their previous experience and understanding of their educational potential. Section C examined respondents' attitudes and interest towards the use of mobile applications as learning tools. Finally, Section D evaluated respondents' perceptions of mobile applications in supporting preschool learning. The questionnaire used a five-point Likert scale, where respondents rated each statement from 1 (strongly disagree) to 5 (strongly agree). This scale was chosen because it allowed for an accurate measurement of respondents' opinions and experiences, allowing researchers to effectively measure students' attitudes and knowledge levels (Kirby, 2023).

3.4 Data Analysis

This study used a random sampling method, involving 40 caregivers and 40 preschool students. A questionnaire was distributed to collect data via Google Forms, focusing on demographic information, assess respondents' knowledge of Mobile applications in learning, and assess their perceptions of the application. The questionnaire used a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Data analysis was conducted using descriptive methods such as percentage and mean using the Statistical Package for Social Sciences (SPSS) software.

4.0 Result

This section presents the findings of the study derived through descriptive analysis. The results indicate that preschool students require interactive mobile applications that offer a variety of learning activities and function as supportive tools aligned with the demands of 21st-century learning (Noor Hidayah et al. 2023).

4.1 Socio-Demographic

Section A is about the demographics of the respondents who answered the survey. The number of respondents from various faculties in this study is shown in Table 2.

Table 1: The Demographic Information of the Respondent

Factor	Category	Frequency	Percentage%
Guardian Gender	Male	9	22.5
	Female	31	77.5
Age	21-30 years	30	75
	31-40 years	8	20
	41-50 years	2	5
Kids gender	Male	19	47.5
	Female	21	52.5
Kids age	3 years	14	35
	4 years	14	35
	5 years	7	17.5
	6 years	5	12.5

Data collection for the Mobile learning application involved 40 caregivers aged between 21 and 50 years. The sample comprised predominantly women (77.5%) compared to men (22.5%). In terms of age distribution, 75% were between 21 and 30 years, 20% between 31 and 40 years, and 5% between 41 and 50 years. For preschool students, 52.5% were female and 47.5% were male.

4.2 Users' Knowledge of Digital Reading Mobile Applications in Educational Contexts

This section presents respondents' knowledge and awareness of digital reading mobile applications in educational contexts.

Table 2: Users' Knowledge of Digital Reading Mobile Applications in Educational Contexts

NO	ITEMS	SD %	D %	NA %	A %	SA %	MIN %
1.	I am aware of the existence of digital reading applications.	0	0	0	40	60	4.58
2.	I am good at using mobile applications.	0	0	2.5	17.5	80	4.78
3.	Mobile applications serve as a medium for providing access to information.	0	0	0	12.5	87.5	4.88
4.	Mobile applications facilitate ease of reading.	0	0	0	20	80	4.80
5.	Mobile applications contribute to cost savings in accessing reading materials.	0	0	0	17.5	82.5	4.83

* SD - Strongly Disagree, D – Disagree, NA - Neither, A – Agree and SA – Strongly Agree

The analysis revealed that all respondents acknowledged awareness of digital reading mobile applications, with 60% strongly agreeing and 40% agreeing with the statement. The mean score recorded was 4.58. As shown in Table 2, most respondents strongly agreed (80%) or agreed (17.5%) with the statement 'I am good at using mobile applications,' yielding a mean score of 4.78. For the item 'Mobile applications serve as a medium for providing access to information,' 87.5% strongly agreed and 12.5% agreed, with a mean score of 4.88.

The findings indicate that the majority of respondents perceived mobile applications as highly beneficial in the learning process. Specifically, 80% strongly agreed and 20% agreed that mobile applications facilitate ease of reading in educational contexts, producing a mean score of 4.80. Similarly, for the statement that mobile applications contribute to cost savings in accessing reading materials, 82.5% strongly agreed and 17.5% agreed, resulting in a mean score of 4.83. These results suggest that mobile applications are not only effective in enhancing reading convenience but also play a significant role in reducing the financial burden of acquiring learning resources.

4.3 User Attitudes and Interests Towards Reading Using Mobile Applications.

The following is the interpretation of the min score analysis for user attitude and interest towards reading using mobile application, based on each item assessed within the respective sections. The mean scores for items are presented in Table 3.

Table 3: User Attitudes and Interests Towards Reading Using Mobile Applications

NO	ITEMS	SD %	D %	NA %	A %	SA %	MIN %
1.	I am highly interested in reading through mobile applications.	0	2.5	0	17.5	80	4.78
2.	The presentation of reading materials in mobile applications is simpler and easier to comprehend.	0	0	5	10	85	4.80
3.	Reading through mobile applications is engaging	0	0	5	12.5	82.5	4.78
4.	Reading through mobile applications enhances my understanding.	0	0	5	10	85	4.80
5.	Reading through mobile applications is not bored.	0	0	2.5	20	77.5	4.75
6.	Mobile applications facilitate ease of reading.	0	0	2.5	17.5	80	4.78

* SD - Strongly Disagree, D – Disagree, NA - Neither, A – Agree and SA – Strongly Agree

The analysis indicates a strong level of interest among respondents in reading through mobile applications. A total of 80% strongly agreed and 17.5% agreed with the statement, while only 2.5% disagreed, yielding a mean score of 4.78. This suggests that mobile applications are perceived as an appealing platform for reading. Similarly, the presentation of reading materials in mobile applications was viewed positively, with 85% strongly agreeing, 10% agreeing, and 5% remaining neutral, resulting in a mean score of 4.80. These findings demonstrate that the simplified and comprehensible format of digital reading applications enhances their acceptance and usability among users

The results indicate that reading through mobile applications was generally perceived as engaging, with 82.5% of respondents strongly agreeing, 12.5% agreeing, and 5% remaining neutral, producing a mean score of 4.78. Similarly, 85% strongly agreed and 10% agreed with the statement that mobile applications enhance their understanding, while only 5% were neutral. In terms of the reading experience, 77.5% of respondents strongly agreed and 20% agreed that reading through mobile applications is not boring, whereas 2.5% were neutral, yielding a mean score of 4.75. Furthermore, the statement that mobile applications facilitate ease of reading received strong support, with 80% strongly agreeing, 17.5% agreeing, and 2.5% neutral, resulting in a mean score of 4.78. Collectively, these findings suggest that mobile applications are effective in engaging users, enhancing comprehension, reducing monotony, and improving overall reading convenience.

This aligns with previous studies which emphasize that digital tools, when designed with user interactivity and accessibility in mind, can foster greater motivation and sustained engagement in learning (Chen & Tsai, 2021; Hashim et al., 2022). The positive responses also

highlight the potential of mobile reading applications to complement traditional reading practices by providing flexible, cost-effective, and learner-centered alternatives.

4.4 User Perception Towards Multimedia Elements in Mobile Application

Table 4 presents the survey of student perception towards multimedia elements in mobile application. The use of multimedia technology in learning facilitates teaching activities. According to Mohd Nizam et. al., (2024), Yahya & Syahrul Nizam (2022), the use of visual elements such as graphics, animations and interactives give educators the opportunity to express information in various ways that are clearer and easier to understand.

Table 4: User Perception Towards Multimedia Elements in Mobile Application

NO	ITEMS	SD %	D %	NA %	A %	SA %	MIN %
1.	The elements in this application are highly interactive.	0	2.5	0	17.5	80	4.78
2.	The text used in this application is clear and easy to read.	0	0	5	17.5	82.5	4.93
3.	The use of animations is engaging and contextually appropriate.	0	0	0	5	95	4.95
4.	The integration of audio features in the application is highly appealing.	0	0	0	7.5	92.5	4.93
5.	The addition of audio features increases my interest in using this application.	0	0	0	17.5	82.5	4.83
6.	The buttons or links provided facilitate effective navigation of the application's content.	0	0	0	12.5	87.5	4.88
7.	The icons in this application are easily recognizable in terms of their functions.	0	0	0	27.5	72.5	4.75
8.	I enjoy using this application	0	0	0	12.5	87.5	4.85

* SD - Strongly Disagree, D – Disagree, NA - Neither, A – Agree and SA – Strongly Agree

Table 4 shows that respondents had highly positive perceptions of the application's interactive and multimedia features, with mean scores ranging from 4.75 to 4.95. The highest mean was recorded for animation (M = 4.95), followed by text clarity and audio appeal (M = 4.93). Navigation (M = 4.88) and overall enjoyment (M = 4.85) also received high ratings. Audio features increasing users' interest (M = 4.83), application interactivity (M = 4.78), and icon

recognition (M = 4.75) similarly demonstrated positive perceptions. Overall, the findings indicate that the application was perceived as interactive, engaging, easy to navigate, and enjoyable to use.

4.5 User Perception Towards Mobile Application

This section presents the findings on respondents' perceptions of the *The Amazing Predator* mobile application as a learning tool. The analysis focuses on learning enjoyment, interactivity, content presentation, ease of understanding, usability, and reading motivation. The findings are presented based on the mean scores and response percentages obtained from the questionnaire.

Table 5: User Perception Towards Mobile Application

NO	ITEMS	SD %	D %	NA %	A %	SA %	MIN %
1.	The application makes learning enjoyable.	0	0	0	10	90	4.90
2.	The elements of the application are highly interactive.	0	0	0	27.5	72.5	4.75
3.	The graphics, text, and audio features make reading enjoyable.	0	0	0	25	75	4.75
4.	The content of the application is engaging.	0	0	0	12.5	87.5	4.85
5.	The content of the application is easy to understand.	0	0	0	10	90	4.90
6.	The content presented in the application is satisfactory.	0	0	0	15	85	4.85
7.	The content of the application increases my motivation to read.	0	0	0	10	90	4.90

* SD - Strongly Disagree, D – Disagree, NA - Neither, A – Agree and SA – Strongly Agree

Table 5 indicates that respondents had highly positive perceptions of the application, with mean scores ranging from 4.75 to 4.90. The highest mean scores (M = 4.90) were recorded for learning enjoyment, ease of understanding, and reading motivation. Meanwhile, interactivity and the integration of graphics, text, and audio recorded the lowest mean score (M = 4.75), although the perceptions remained highly positive. Overall, the findings suggest that the application was perceived as enjoyable, engaging, easy to understand, well-organized, and supportive of respondents' motivation to read.

5.0 Discussion and Conclusion

The findings indicate that respondents had highly positive perceptions of the *The Amazing Predator* mobile application. The high mean scores suggest that the application was perceived as enjoyable, engaging, easy to understand, and well-organized. In particular, the high scores for learning enjoyment and reading motivation indicate that the application may contribute to a more engaging learning experience among preschool learners. The positive perception of interactive elements and multimedia features also suggests that the integration of graphics, text, and audio can support children's interest during learning activities. These findings are consistent with previous research highlighting the potential of mobile and multimedia-based applications to enhance learners' engagement and interest in learning (Hashim et al., 2023; Noor Hidayah et al., 2023; Safinah Ismail et al., 2023). Overall, *The Amazing Predator* was positively perceived as an engaging and user-friendly learning application. The findings suggest its potential as a supplementary tool for supporting enjoyable and motivating learning experiences in preschool education.

References

Abdul Halim, H., Sivabalan, K., Ibrahim, K. A., Mohd Arif, R. (2025). *Exploring Students' Perception and Knowledge of ChatGPT as a Learning Tool at Widad University College.* Journal of Science and Management Research Vol. 15 Issue 1; April 2025 2600-738X.

Abdullah Kamal, S. S. L., Masnan, A. B., & Hashim, N. H., (2022) Parental Involvement in Young Children's Education in Malaysia: A Systematic Literature Review International Journal of Learning, Teaching and Educational Research Vol. 21, No. 3, pp. 319-341.

Abdullah, S. S. & Ismail, A., (2022). *Kebimbangan Dan Peranan Ibu Dalam Menjaga Akidah Dan Akhlak Anak-Anak Dalam Era Digital.* Jurnal Pengajian Islam ISSN: 1823 7126 E-ISSSN: 0127-8002, Vol. 15, No. I, Halaman 195-207

Abd. Rahman, A. I. & Ahmad, A., (2024). *Cabaran Guru Menggunakan Bahan Elektronik dalam Proses Pengajaran dan Pembelajaran.* Sejarah Malaysian Journal of Social Sciences and Humanities (MJSSH), Volume 9, Issue 2,

Ahmad. H., & Tasir, Z., (2019). *The Effect of Mobile Application towards Malay Language Literacy Skill of Special Education Student with Learning Disabilities.* Innovative Teaching and Learning Journal, 2 (2), 1–16.

Ahmad Sobri, M. N. N., Che Soh, N. F. A., Rashid, M. H. (2024). *Pendigitalan Dalam Kalangan Guru Prasekolah di Kuantan Dalam Proses Pengajaran dan Pembelajaran.* Journal of Science and Management Research Vol. 13 Issue 1; April 2024 2600-738X.

Anamalai, T. R. & Mohamad Yatim, M. H. (2022). *Keberkesanan M-Pembelajaran Berasaskan Aplikasi Kahoot! Terhadap Pencapaian Murid dalam Topik Operasi Asas Matematik (Effectiveness Of M-Learning Based on Kahoot Application! Towards Achievement of Students in Topic of Basic Mathematical Operations)*. Jurnal Penyelidikan Dedikasi Jilid 20 (Bil.2) 2022.

Awang Hat Mohd Noor. (2024). *Penggunaan Aplikasi E-Doa Dalam Pengajaran Dan Pembelajaran Bahasa Arab Di Kelas Aliran Agama (KAA) di Tumpat*. Vol. 24 No.2 (2024) Jurnal al-Sirat. ISSN: 1823-4313 / e-ISSN: 2785-9169.

Buang, Z., & Mohamad, M. M. (2019). *Kolaborasi dan Komunikasi dalam Kelestarian Pembelajaran Sepanjang Hayat*. Online Journal for TVET Practitioners, 4(2), 105-113.

Che Ibrahim, N. F. S., Mohd Rusli1, N. F., Mohd Ra'in Shaari, M. R., & Kesavan Nallaluthan, K. (2021. *Persepsi Pelajar terhadap Aplikasi Multimedia Interaktif dalam Proses Pengajaran dan Pembelajaran Abad ke-21.* Online Journal for TVET Practitioners Vol. 6 No. 1 (2021) p. 15-24.

Che Lah, N.H, Mad Nor, M. S., Roslan, M. H. H., Zulkifli, M. A. A., Tasir, A., Hashim, S. Ahmed Alkhayyat & Wan Mustafa, W. A. (2023). *The Hooray! Hooray! ABC: The Evaluation of Mobile Application for Preschool Students*. Journal of ICT in Education (JICTIE). ISSN 2289-7844 / 10 / 2 / 2023 / 55-73.

Delgado, J. L. D., Bone, Y. I. E. B., Lascano, M. A. G. L., & España, S. G. G. E. (2019). *Dyslexia as Learning Problem and Its Pedagogical Intervention*. International Journal of Health Sciences, 3(3), 1-7.

Faizal Ramlan, M., Khalid, M., & Nasir, M. (2023). *The Impact of Mobile Applications in Education: A Concept Paper*. International Journal of Academic Research in Progressive Education and Development. Vol. 12, No. 3, 2023, E-ISSN: 2226-6348 © 2023.

Hamzah, N., Rosli, N. F. E. M., Rubani, S. N. K., Ariffin, A., & Zakaria, N. (2022). *Aplikasi Android Pembelajaran Abjad Bahasa Jepun (JingoCat Apps).* Innovative Teaching and Learning Journal, 6(1), 52-60.

Hashim, S., Maleki, N. H., Amiruddin, M. H., Ismail, M. E., & Zulkifli, N. N. (2023). *Development of Android Applications to Assist Preschool Children in Learning to Read as A Foundation in The Field Of TVET*. Online Journal for TVET Practitioners Vol. 8 No. 1 (2023) 14-24.

Hiew, J., Mohamed, S., Satari, N., & Bakar, K. A. (2022). *The Readiness of Preschool Teachers in Integrating 4th Industrial Revolution Skills in Classroom: A Recent Study.* Current Research in Language, Literature and Education Vol. 3, 1-11.

Ismail, S., Mustafa, N. M., Shaharuddin, S. A., Yahaya, M. & Razali, K. Y. (2023). *Learning Style Through Fun Al-Quran Digital Application (Fun Q) Gaya Pembelajaran Melalui Aplikasi Digital Fun Al-Quran (Fun-Q).* Journal of Advanced Research in Computing and Applications. 32, Issue 1 (2023) 13-21.

Jahawi. Y., & Junaini. S., N. (2022). *Memperkasakan Potensi Aplikasi Mudah Alih Bagi Pembelajaran Bahasa Melayu.*

Joosten, T., Lee-McCarthy, K., Harness, L., & Paulus, R. (2020). *Digital Learning Innovation Trends*. Online Learning Consortium.

Kamaluddin, N. A. & Husnin, H., (2022*). Penggunaan Teknologi Maklumat dan Komunikasi (TMK) dalam Pendidikan (The Use of Information and Communication (ICT) in Education)*. Jurnal Dunia Pendidikan e-ISSN: 2682-826X | Vol. 4, No. 2, 333-343,

Kirby, S. (2023). *Open Research Case Study - Mathematics and Statistics*. Open Journal of Statistics, 13(4). https://doi.org/www.scirp.org/journal/ojs.

Mayer, R. E. (2014). Incorporating Motivation into Multimedia Learning. Learning and Instruction, doi: 10.1016/j.learninstruc.2013.04.003 29, 171–173.

Mad Nordin, A.S., Alias, B. S. & Mahamod, Z., (2023). *Jurnal Penyelidikan Pendidikan dan Teknologi Malaysia (JPPTM*) ISSN (Online): 2976-2634 Volume:1 Issue: 1 66 Penerbit: Icbe Publication (Ns0237611-W) Pendigitalan Pendidikan

Mohd Noor, A. H. (2024). *Penggunaan Aplikasi E-Doa Dalam Pengajaran dan Pembelajaran Bahasa Arab di Kelas Aliran Agama (Kaa) Di Tumpat.* Vol. 24 No.2 (2024) Jurnal Al-Sirat. ISSN: 1823-4313 / E-ISSN: 2785-9169. Https://Ejournal.Unipsas.Edu.My/.

Md. Salleh, S., & Tasir, Z. (2011). *Pembinaan Sistem Pembelajaran Berasaskan Simulasi Interaktif Menerusi Web Bagi Kursus Telekomunikasi Dan Rangkaian*. Jurnal Teknologi Pendidikan Malaysia. Jilid 1, Nombor 1.

Mohd So'ad, S. N. A. & Ismail, M. N. (2022). *Pembangunan Aplikasi Pembelajaran Warna Berasaskan Realiti Terimbuh Untuk Pra- sekolah. Development of Augmented Reality-based Color Learning Application for Pre-school.* Applied Information Technology and Computer Science Vol. 3 No. 1 (2022) 94-112.

Mohamed Ali, M. H., Hafidzi, A., Mohd Herrow, M. F., Yahya, M., Ismail, A. & Abdul Samad, N. (2022). *The Development of Mobile Learning (M-Learning) Apps Adik-Adik Solat to Enhance Learning Experience in Solat Pembangunan Aplikasi Pembelajaran Mudah Alih (M Learning) Adik-Adik Solat untuk Meningkatkan Pengalaman Pembelajaran dalam Solat.* Journal of Quranic Sciences and Research Vol. 3 No. 1 (2022) 35-41.

Nie, M., Bird, T., & Edirisingha, P. (2013). E-Book Readers and Pdas For Work-Based Learners. In Z. L. Berge & L. Y. Muilenburg (Eds.), The handbook of mobile learning (pp. 209–223). New York: Routledge.

Nordin, N., & Bacotang, J. (2021). *Issues and Trends the Usage of Information and Communication Technology in Early Childhood Education*. Jurnal Pendidikan Awal Kanak-kanak Kebangsaan, 10(1), 99-107. (Nordin & Bacotang 2021)

Papadakis, S., Kalogiannakis, M. and Zaranis, N. (2016). *Developing Fundamental Programming Concepts and Computational Thinking with Scratchjr In Preschool Education: A Case Study*. International Journal of Mobile Learning and Organisation, 10(3), 187–202.

Razali, N. H., & Khalid, F., (2021). *Penggunaan Aplikasi Pembelajaran Mudah Alih dalam Pembelajaran Matematik bagi Pelajar Sekolah Menengah*. Malaysian Journal of Social Sciences and Humanities (MJSSH), Volume 6, Issue 6, (page 73 - 85), 2021. DOI: https://doi.org/10.47405/mjssh.v6i6.812.

Sanela Nesimović. (2021). *The Effects of Mobile Phone / Tablet Use on Preschool Children.* International Journal of Science Academic Research. Vol. 02, Issue 04, pp.1290-1294, April, 2021. ISSN: 2582-6425.

Shima Dyana & Siti Marziah (2018). *Kesan Penggunaan Gajet Kepada Perkembangan Kognitif Dan Sosial Kanak-Kanak Prasekolah. The Effect of Gadget Usage Towards the Development of Cognitive and Social Among Preschooler.* Jurnal Wacana Sarjana. Vol. 2(4) Dis 2018: 1-6.

Uralova, D. (2021). *The Use of ICT In Preschool Education While Teaching English Language.* TJE-Tematics journal of Education.

Van Reijmersdal, E. A., & Rozendaal, E. (2020). *Transparency of Digital Native And Embedded Advertising: Opportunities and Challenges for Regulation and Education. Communications*, 45(3), 378-388

Zebua, J., & Katemba, C. V. (2024). *Students' Perceptions of Using the OpenAI ChatGPT Application in Improving Writing Skills. JOLLS:* Journal of Language and Literature Studies, 4(1), 110-123. e-ISSN: 2808-1099.